

ATLANTIC JOURNAL

AND FRIEND OF KNOWLEDGE;

A CYCLOPEDIC JOURNAL AND REVIEW

OF UNIVERSAL SCIENCE AND KNOWLEDGE:

HISTORICAL, NATURAL, AND MEDICAL ARTS AND SCIENCES:

INDUSTRY, AGRICULTURE, EDUCATION AND EVERY KIND OF USEFUL INFORMATION:

WITH NUMEROUS FIGURES.

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[No. 3.

Knowledge is the mental food of man.

1. ANALYSIS OF FELLENBERG'S SYSTEM OF EDUCATION.

This system is one of the greatest improvements on education effected by philanthropy during this age, since it enables to *educate the poor without any expense*. It is as well calculated for the United States as for Switzerland, yet it hardly begins to be appreciated and introduced. There must be a great lack of patriotism, liberality, and philanthropy in legislatures and individuals, if similar institutions are not quickly adopted every where. To contribute partly to this desirable object, we shall give a brief analysis of the practical principles of Fellenberg, furnished us by a pupil of his school.

1. The good and wise Fellenberg has acted upon the following principles.

2. The present society and generation are unhappy: we ought to endeavour to afford or give to posterity the means of being less so, by a better education.

3. A new kind of education is needed, not by levelling the two classes or poles of society, the rich and the poor; but by rendering both happier. They ought not to be mixed nor blended; but both prepared for their respective duties.

4. Education is the aim and instruction is one of the means to achieve this improvement. Education consists in forming the heart and character, unfolding the under-

standing, and giving strength and health to the body.

5. Instruction speaks only to the memory, but by exercising the understanding and reason, it has a due influence on the heart and education. A little instruction with much education is better than little education with much instruction. By neglecting education for instruction we have lost sight of this true aim.

6. Each class ought to be taught by counsel in action, exercise of hands, enlightening their understanding, and ennobling their hearts, that they may love and practice virtue.

7. The poor are directed to the labor of their hands, care is taken of their minds and hearts to lead them to a virtuous conduct; their future welfare and happiness, with an assured subsistence are secured by making them enlightened and virtuous husbandmen and mechanics.

8. The rich or superior classes are taught to love the poor or the inferior classes, so as to produce social happiness and harmony, and prevent civil discords.

9. The insensible but rapid changes produced by the progress of human mind, the subdivision of property, the abolition of feudal ties, the influence of discoveries, changes of manners, &c. absolutely require a modification of society and education in those who are to lead or rule.

10. Social peace can only be preserved by enlightening them and directing them well in their youth, so as to make them useful and popular leaders. Thus preventing revolutions, and the strife of ambitious hypocrites directing the rabble.

11. The worthy Fellenberg has given up his time and fortune for thirty years, to put in practice these improvements. He was once much opposed by the aristocracy of Berne in which Canton, his estate of Hofwyl is situated. But he has overcome all opposition and succeeded to make Switzerland the centre of European civilization.

12. This was done without any ultimate expense, nor diminishing his estate, since it was found that the schools supported themselves by the labor of the poor, and the pay of the rich.

13. The liberals applaud his labors, the servile tremble. Some monarchs have forbidden their subjects to send their children to it; yet it is always filled by the liberals and the Swiss.

14. It has been said that such improvements and knowledge made so cheap, may be abused. But Fellenberg has proved that their use may be regulated, and all the abuses repressed.

15. From 1809 to 1821, or during twelve years, the only expenses or advances were £3,600, or only £300 per annum: while many thousands have been educated at Hofwyl. Thus hardly one dollar expense for each student on an average.

16. The establishments of Hofwyl consist of eight schools or institutions. 1. Model Farm. 2. Experimental Farm. 3. Agricultural Factory. 4. School for Boys. 5. School for Girls. 6. Institute, or Superior School. 7. Agricultural School. 8. Normal School.

17. The model farm is cultivated with the greatest care, with the most perfect implements and machines, and with the least number of cattle. Whereby Fellenberg obtains more

produce with less labor, and sets an example to all.

18. The experimental farm and garden is used to test every kind of new practices and improvements; whenever their utility has been proved, they are introduced in the model farm. This is a very beneficial school of improvement.

19. The third branch or manufacture of agricultural implements and machines is a most interesting and wonderful establishment. It receives models from all countries. Nothing is adopted or rejected without testing by experiments. It is a complete application of mechanics to all the branches of agriculture. It supplies new useful tools and machines to all Switzerland and Europe.

20. In the school for boys they are admitted from five to twenty. They support, feed and instruct themselves by their own labor in the farm and factory.

21. The instruction consists in practical agriculture, reading, writing, arithmetic, geometry, agronomic botany and natural history, abridged history, geography, drawing, modern languages, music, gymnastics, &c. It is found that the methods of natural sciences form the mind of youth to order better than languages; when riper mathematics are added.

22. If any child shows genius of extraordinary talents for any thing, he is taken to the superior school or institute, and thus every poor child has a chance to become a member of the superior class by his talents and exertions.

23. The monitorial plan is adopted for every thing; the monitors are selected from the best scholars, and may be superseded by others: thus keeping up the moral influence of a co-equal emulation.

24. The students are treated like the adopted children of their teachers. They are made happy in labor, meals, games and recreations. Thus a domestic and public education is happily blended. They have plenty

of exercise, a good healthy diet, and at eighteen or twenty they enter the world well prepared for every duty.

25. The teachers are selected with care; they partake of the labors, studies and recreations, they treat the boys mildly, all punishments are lenient and paternal, yet hardly ever inflicted.

26. The school for girls is separate, but similar. The poor girls are raised from the abjection of servants, taught to provide for themselves. They are employed in suitable female labor, taught taste and skill of hands.

27. The two sexes are not intended for the same occupations, women have less strength, but greater skill in all sedentary occupations. They are taught all what is required to become good wives and mothers, which has great influence on producing good husbands and good children.

28. The institute or superior school, is chiefly intended for the rich scholars who pay for their board and tuition; they have somewhat better accommodations, and are taught all the branches of science and literature as in colleges: but in other respects fare and behave as in the lower school.

29. In the special agricultural school are admitted men, all students are above twenty, chiefly land owners, who are taught the improved agriculture of the schools and farms and pay for it.

30. The last or normal school is held in summer, when forty lectures are given to students wishing to be teachers, to enable them to spread and apply this education to all the villages of Switzerland.

Let all those who wish for the welfare of mankind and our country, ponder well on this useful, benevolent, practical, and practicable plan, so as to introduce it speedily with us everywhere. Few modifications will be needed in the United States, we have in fact the two classes of rich and poor already, instead of nobles and poor. Ten years, from

eight to eighteen, will educate a child without cost to the parent nor the state, and make him a useful enlightened citizen.

2. TAXES ON KNOWLEDGE.

One of the means employed by the foes of knowledge, freedom and civilization, to check these blessings, is to tax knowledge. It is done in many ways in different countries. The most depraved governments employ censure of the press, prohibitions, printers' license tax, stamps, heavy duties on paper and books, heavy postages, &c. in order to prevent the circulation of knowledge.

Even in England heavy complaints are made against stamps and taxes on knowledge, excessive duties, &c. While in the United States we appear to follow closely this example, although we boast of complete freedom of the press. This is a kind of political hypocrisy since it is not true. Without mentioning here the numerous impediments to the increase of knowledge, exceeding those of France and England in some instances, and which shall hereafter be enumerated, the actual needless taxes in knowledge will now command our attention, and be exposed.

The heavy postages on periodicals (not newspapers,) on pamphlets, books, printed circulars, engravings, orders, &c. is the most odious and obnoxious. Because quite useless, not required for revenue, nor to support the post office department. When pamphlets were at two cents per sheet, it was said that the mails were overloaded with them, and that the nation was in debt. The tax was triplicated and raised to six cents per sheet, with the acknowledged intention of preventing their circulation by mail, as the tax amounts to about two hundred per cent on their cost, or one hundred per cent on their usual selling price. This avowed shameful purpose of preventing the circulation of pamphlets and books, by giving a kind

of monopoly to periodicals, has compelled authors and publishers to issue almost all publications periodically so as to enjoy the benefit of the lessened postage, and thus the mails have been loaded with them as heretofore and even often with pamphlets and books, such being the need of the people.

Upon newspapers the tax amounts to about twenty-five per cent on the average for weekly papers.

On a paper of \$ 2 per annum, 52 numbers at 1 cent 52 cents, or 26 per cent. When sent far 2 cents \$ 1.4 or 52 per cent!

On a daily paper of \$ 8 per annum about 300 papers at 1 cent \$ 3 or 37½ per cent, or 75 per cent when sent far!

On periodicals, monthly or quarterly, of about \$ 5 per annum, and about 60 sheets at 1½ cent 90 cents or nearly 20 per cent, when sent far 2½ cents the sheet \$ 1.50 or 37½ per cent!

Even these rates are extravagant and useless. This tax is not required by our treasury, which is now overflowing. It is not required by the people who loudly complain of it. It is a tax on industry and knowledge, the very reverse of the protective taxes on industry. Lastly it is not required by the post office department, because the tax on letters pays all expenses. It is said that half of it alone goes into the post office treasury, the other half being allowed to the postmasters as a compensation for the trouble of distribution. The half going to the post office is such a trifle as not to be wanted by it. If all postages on these were abolished there would be no lack of applicants for the office of postmasters every where, with the express condition of distributing periodicals gratis. Or if that would be too liberal, a small compensation of one cent for every periodical distributed, might be allowed to the postmasters alone, the United States or post office depart-

ment charging nothing. There is already a precedent for this practice in the city letters, on which 1 cent is allowed to the postmaster alone on each letter large or small.

No more trouble is found to distribute a pamphlet or book, than a periodical pamphlet, and therefore one cent to postmasters on each would also be an adequate compensation. But with the actual abominable tax of 200 per cent on them, any modification would be acceptable, even one cent a sheet which would reduce the tax to one-sixth.

Now a pamphlet of 64 pages 8vo. or 4 sheets, pays 25 cents postage, or 150 per cent on first cost of about 10 cents, or 100 per cent on selling cost of 25 cents!!!

At this new rate they would pay 4 cents or 40 per cent on cost or 17 per cent on selling price.

A book of \$ 2 and 25 sheets now pays \$ 1.56 postage tax or 78 per cent; but on the prime cost of about 75 cents, it is above 200 per cent. While by the new rate it would be 16 per cent on selling price or 33 per cent on the prime cost.

If it is contended that the mails would be loaded with books and pamphlets at this rate, so much the better, since knowledge would circulate freely and rapidly. Pamphlets and periodicals could be carried by the mail in weekly wagons, at a cheap rate, instead of daily mail bags, by new and easy arrangements. At present a single book or pamphlet can hardly circulate. It must be sent with others in packages, at a great expense of time if not money.

The same facilities ought to be extended to every kind of printed materials sent by mail, as handbills, circulars, engravings, prints, music, &c. It is a shame to charge letter postage for any printing less than 2 sheets. They certainly cannot be heavier for the mail nor more troublesome to deliver. There is no excuse for this imposition and prohibition of knowledge. Handbills

must now be sent by private conveyance or not at all. Circulars are prohibited likewise except to the rich. There is no end to the inconveniences to which the public is liable by these illiberal and preposterous arrangements. A letter of half a sheet pays like a sheet, but half a printed sheet pays four times as much as a single printed sheet. Is it not unjust and abominable.

They have probably originated in want of information in the legislators on the subject, and above all in the fact that they being free of postage do not feel all the evils of this system. Let them be taxed too and they then would perhaps think of the people they tax, and who pay them to make good laws, neither useless nor vexatious.

Another abominable and useless tax is that on double letters, or rather inclosures of drafts or money, whereby the rich can afford to send his large remittances, and the poor, or whoever wants to send or receive small remittances, is prohibited by the following shameful taxes.

To send a draft or bill or \$ 1 including the letter 25 per cent, if far 50 per cent!!!

To send \$ 5, 5 or 10 per cent.

To send \$ 10, only $\frac{1}{2}$ or 5 per cent.

To send \$ 100, only $\frac{1}{4}$ or $\frac{1}{2}$ per cent!!!

This fall's heavy on all publishers of periodicals and many other trades. It is preposterous and intolerable, since there is no more trouble in the delivery of letters with inclosures. It ought to be remedied. All money sent by mail to be free or liable to a tax of one per cent only, one cent on one dollar, and one dollar on one hundred. This would be just at least. Or else the franking privilege to and fro of postmasters ought to be extended to editors and authors, or all the useful trades who deal and depend on small remittances.

These post office impositions, extortions and prohibitions have swelled this statement so far that the tax-

es on printers and booksellers must be omitted at present. Let us merely state the fact that there are heavy taxes, mostly useless and obnoxious on 1. Foreign books never printed here. 2. On lead and type metal. 3. On paper and machinery. 4. On wood cuts, copper plates, and lithographic stones. 5. On paper and pasteboard. 6. On skin and parchment, &c. all which fall on these useful trades and the manufacture of knowledge, journals and books. Besides the charges of taxation, advertising, publishing and selling.

B. FRANKLIN, JR.

3. *Analysis of the Philosophy of Pythagoras as promulgated*

2400 years ago.

God is One: He is within the universe and the universe is within God.

God is every where and yet no where! He is a circle, the centre of which is every where and circumference no where.

God is the soul of the universe: the order and harmony through which it exists and is preserved.

God is the great Unit: numbers and things emanate from the unit.

God is universal, ineffable, perfect, and the principle of every good.

All what is, exists by number and harmony.

Harmony rules over numbers and produces order.

Harmony is the invisible sun of the world.

Beauty, good, virtue and health, proceed from harmony.

The science of numbers is holy: it is the only certain one.

The science of bodies is less certain; they are evanescent and ever changing.

Nature is a stream that ever flows.

Nature is what may be seen of God: it is the body of God.

God is the soul and life of nature.

The material part of nature is

formed by elements: these are the other country but his family and various configurations of its parts.

The souls are particles emanated from the universal soul.

They partake therefore of immortality: their annihilation is impossible.

Death is their passage from a body to another.

Space is infinite. Time is infinite. God is infinite.

Nature is incommensurable: the plurality of worlds is evident.

The smallest star is a sun similar to ours, shining over planets and worlds like ours.

We revolve round the sun; they revolve round their suns.

The sun, the stars, the moon, and the planets are globes. Our earth is also a globe.

All the worlds have inhabitants like or unlike those of our globe.

The souls travel from bodies to bodies, and from worlds to worlds.

This is the spiritual metempsycho-sis or passage; the real palingenesys or renovation and resurrection.

Every thing is passage and renovation in nature and man.

Such is the birth of man, his childhood and his education. Such will be his death.

Man will not be annihilated at this passage, nor die forever. He will have many lives yet to go through.

Rewards and punishments, await us in these after lives, according to our previous behaviour.

God is good: men are wicked. Why so?

Because God is perfect and men imperfect.

The imperfections of men create moral evils and disorders.

Philosophy and wisdom correct these evils and disorders.

Philosophy is not wisdom; but it leads to it, it is the love of good.

Science is not philosophy; but it leads to it. Science is the knowledge of order.

The philosopher acknowledges no

mankind; he waits for the return of primitive equality, ere he may adopt another.

He tells the truth without fear, it is his duty.

He deplores and unveils the crimes of men and nations.

What will be his rewards? persecution, contempt or neglect.

If he is asked what God he worships, let him answer: a God whose body is light, and whose soul is Truth.

He believes when he has strong motives of credibility, and he obeys when he sees the need of it; but not otherwise.

Let him respect the law, when it is respectable.

There is an ETERNAL LAW, anterior to all other laws, and their immortal type.

This law is the law of universal order and harmony.

Every man is tacitly bound to preserve this law, and to contribute to the preservation of moral order.

The rulers, priests, and warriors, who disturb this order, are as many banes of society.

The tyrants and slaves are the hammers and anvils of society. Let us beware to be crushed between them.

Wicked men labor under a mental disorder. Let us try to cure it. Wisdom is the remedy to be used.

Let us exercise universal benevolence. We must love all men even when they are wicked.

Let us correct the evils of human nature by education and instruction.

Happiness is offered to all men, let them reach it.

Do not deny this right to any one except to those madmen who seek their happiness in the misfortunes of others.

The regeneration of mankind, will never be completed until the insatiable demon of property is abolished.

But if we were to say to the wealthy, put your riches in common, they would call us knaves.

If we were to say so to the ignorant, they might call us fools. If to rulers and powerful men, they would forbid us to repeat it.

What is then to be done? Let us labor in silence and by our example. A time will come, when it will be safe to speak openly the truth.

Real equality will then be understood, and effectually established.

It consists in every individual being equally enlightened, wealthy and happy, according to his wish and capability.

Natural equality is not fit for the mob nor the ignorant; they could not enjoy it a single day without mischief.

But let us work to make them fit for it in time.

Our good and bad qualities proceed from our education.

Let us reform this essential branch of human economy.

The reform of mankind is a labor for ages, it will be subject to many relapses; but we must not despair to achieve it.

Let nothing disgust us and thwart us in this noble and eminent undertaking.

Those who feel a passion for the love of truth and wisdom will never sink under it.

Let us transmit the means and knowledge from age to age, from nations to nations.

Let us nurse with care in our bosoms, this last hope of mankind; and when its appointed time will come, let us present it to their eyes.

But let us beware to give guilty bearings to thy eternal truths.

Meantime let us improve ourselves and increase our wisdom and knowledge.

Let us beware of our senses, they often deceive us.

Our secret senses are our internal sight and feeling.

We must not judge of things by

mere appearances, nothing is more deceitful.

Let us study their essential and real qualities and faculties.

There is often no better ground for an opinion than plausibility.

If a thing is possible, it may be believed. To believe we must begin by doubting. Doubt is the mantle of wisdom.

The nature of bodies results from the mixture and separation of elements.

The elements emanate from God. The sun is the mirror of God.

The light of God shines on our minds as the light of the sun on our eyes.

It delights to brighten a good mind. Ignorance is the night of the mind; errors are its clouds.

Happiness is the general pursuit of mankind.

Harmony is the universal chain of happiness.

Let us imitate on earth, the harmony of the heavens.

The same order ought to rule over men and societies, as over worlds and things.

Let wisdom unite itself to labor, and genius to strength, as the earth is united to the skies.

Nature is a republic. It is invisible, imperishable; all the members thereof act in eternal harmony.

Nations! you are all the children of nature; imitate your mother.

Men! in all your thoughts and actions, think of God.

When we wish to become wise, we must not be satisfied with what is good, but ever strive to reach what is better still.

This is the complement of wisdom. Let us improve forever.

But the past has been for us a mixture of good and evil.

Such will be futurity. Never fear evil, but conquer it.

If we expect every thing, nothing shall surprise us.

When danger shall threaten us, let us warn them by the brazen shield of wisdom.

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Wicked men labor under a mental disorder. Let us try to cure it. Wisdom is the remedy to be used.

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The reform of mankind is a labor for ages, it will be subject to many relapses; but we must not despair to achieve it.

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But the past has been for us a mixture of good and evil.

Such will be futurity. Never fear evil, but conquer it.

If we expect every thing, nothing shall surprise us.

When danger shall threaten us, let us warn them by the brazen shield of wisdom.

If the promulgation of truth becomes dangerous, let us conceal it in our bosoms and those of our fellow friends.

Let us institute a society for the preservation of this sacred fire.

Let us become the vestals of truth, let us preserve this holy deposit pure and unadulterated.

It is deplorable to conceal truth and happiness from mankind; but it is often needful.

When the time will come for unveiling the sun of eternal light it will be our duty to do it.

Let us select with care the vestals of truth: every one is not worthy to nurse it.

Our bonds shall be union and harmony, order and knowledge; the results wisdom and love, health and wealth, happiness and peace.

We must unite the labor of the hands to the labor of the mind.

We shall receive no salary for admission, nor instruction, nor under any other shape; let us beware of venality; must we pay to see the sun?

But no one among us can hold perpetual property; he may give it to whom he pleases.

We shall live in common with our families: our eldest men shall be our rulers: our wisest men our teachers and advisers.

Our motto shall be, *To do Good and Keep the Truth.*

Let us be physicians of the body and the soul.

Let us instruct, admonish, and judge mankind.

Let us seek to become mediators in domestic discords, and even in public ones if we are able and called upon.

Let us guide youth, inexperience, ignorance, and repentance.

And let us perform all this without reward.

Let us pardon, ever before hand, those who may do us some injuries, as we pardon the staff of the blind-man striking at random.

Let us remember that we must not say all to all.

Let us beware of blood, money, and error.

Let us live and let us die, for truth, justice, equality, benevolence and happiness.

BENJ. FRANKLIN, JUNR.

4. THE AMERICAN NATIONS AND TRIBES ARE NOT JEWS.

As early as 1829, I published in the Evening Post a letter to the Rev. Ethan Smith, against the singular but absurd opinion that the American tribes descend from the Hebrews or the ten lost tribes. This opinion based upon some religious prejudices and slight acquaintance with philology and antiquities, has been entertained by Penn, Adair, Boudinot, and several other superficial writers, among which Ira Hill, author of a late work, *Antiquities of America Explained*. Hagerstown, Maryland, 1831. It is to me astonishing how in this enlightened age, any such unfounded belief can be sustained; if greater absurdities still did not prevail as yet among a few.

Two recent instances of egregious folly based upon this singular tenet, have induced me to republish my letter of 1829, which if read by those laboring under this delusion cannot fail to shake their belief.

A new Religion or sect has been founded upon this belief! the Mormonites, thus called after a new Alcoran, or Book of Mormon, (which is not a Jewish name.) Supposed to be written in gold letters more than 2000 years ago by Mormon leader of the American Jews. This Book which no one has seen nor read but the founder of the sect, the probable writer thereof, has been made the Bible of a new sect. I have tried in vain to procure a copy of the translation, wherein I could certainly detect a crowd of absurdities and incongruities. Meantime a Sect of Fanatics has arisen therefrom, and wandered from New-York to Ohio and Missouri: an evident proof how false beliefs can be

spread and made subservient to crafty purposes.

The second instance is that of Lord Kingsborough, who having adopted the delusive idea of the Mexicans and other American nations being Jews, has vainly spent the vast sum of \$0,000 pounds sterling, or £135,000!!! to publish fac-similes of Mexican Antiquities and Manuscripts in the Libraries of Dresden, Paris, Vienna, Berlin, Rome, and Bologna, executed by Aglio, and with notes of his own in support of the Jewish origin of the Mexicans. This Work in 7 volumes folio, sells for 200 pounds sterling, or £900 and is deemed a wasteful employment of money, even by the learned, because it does not contain the translations which would be more useful than the glyptic texts. It lacks also the Mexican Manuscripts preserved in Madrid and Simanca's archives of the Indies; the only valuable novelty in this huge work are the Mexican monuments, drawn by Depaix, with the history of Mexico, by Sahagun a Spanish monk, who spent 30 years in Mexico in the 16th century. The great sum spent by this nobleman for this vain support of his fallacious Jewish theory, would have been sufficient to unfold the true history of all the nations of America, by their monuments, languages, traditions and books, or publish 100 volumes on the subject.

C. S. R.

TO THE REV. ETHAN SMITH,
Pastor of Poultney in Vermont.

REV. SIR:

I have lately met by chance the second edition of your work on the *Hebrews in America*, and read it with attention, as I do all works on our Indians, while writing their history before and after Columbus.

Your work and Boudinot's Star in the West, have widely spread again among the religious readers, the old, obsolete and I may say absurd notion that our Indians, nay all the va-

rious American tribes and nations descend from the ten tribes of Israel. This theory advanced by some Jews, by William Penn & Adair, who knew but few tribes of our Indians, is now laughed at by all the learned and enquirers on American history. As it is a pity that the religious community should be again deluded into such improbable belief, I mean to try to show you the impossibility of the fact, and request that should you publish a third edition of your work you will add my remarks, and answer if you can my cogent arguments.

I shall first state why their origin is impossible and next confute your boasted proofs of it.

The American nations cannot descend from the ten tribes of Israel; because,

1st. These ten tribes are not lost, as long supposed, their descendants more or less mixt with the natives, are yet found in Media, Iran, Turan, Cabulistan, Hindostan and China, where late travellers have traced them, calling themselves by various names.

2d. The American nations knew not the Sabbath, or Sabatical weeks and years. This knowledge could never have been lost by Hebrews. The only weeks known in America, were of three days, five days and half lunations, as among the primitive nations, before the week of seven days was used in Asia, and based upon the seven planets, long before the laws of Moses.

3. The Indians hardly knew the use of iron; although common among the Hebrews, and likely never to be lost: nor did they know the plough.

4. The same applies to the art of writing, such an art is never lost, when once known.

5. Circumcision was unknown and even abhorred by the Americans, except two nations who used it, the Mayans of Yucatan who worshipped one hundred idols and the Calchaquis of Chaco who worshipped the sun and stars, believing that depart-

ed souls became stars. These beliefs are quite different from Judaism, and besides this rite was common to Egypt, Ethiopia, Edom, Colchis, &c.

6. None of the American tribes have the striking sharp Jewish features, and physical conformation.

7. The Americans eat hogs, hares, fish, and all the forbidden animals of Moses; but each tribe abstain from their tutelar animals, or badges of families of some peculiar sort, as we abstain from the dog and horse without any rational cause.

8. The American customs of scalping, torturing prisoners, cannibalism, calumet, painting bodies, and going naked even in very cold climates, are totally unlike the Hebrew customs.

9. A multitude of languages exist in America, which may perhaps be reduced to twenty-five radical languages and two thousand dialects and sub-dialects. But they are often unlike the Hebrew in roots, words and grammar: they have by far more analogies with the Sanscrit, Celtic, Bask, Pelagian, Berber, Lybian, Egyptian, Persian, Turan, &c. or in fact all the primitive languages of mankind.

10. The Americans cannot have sprung from a single nation, because independently of the languages, their features and complexions are as various as in Africa and Asia.—We find in America; white, tawny, brown, yellow, olive, copper, and even black nations as in Africa. Also dwarfs and giants, handsome and ugly features, flat and aquiline noses, thick and thin lips, &c.

Let us now examine your proofs.

1. You say all the Americans had the same god, *Yohewah*: this is utterly false. This was the god of the Chactas and Floridans. I have found a multitude of names for it among the Unitarians. Many had triple gods or trimurtis as in Hindostan and with names nearly Sanscrit. Polytheism, idolatry and a complex mythology prevailed among all the

most civilized nations. All the ancient religions were found in America, Theism, Sabeism, Magism, Hinduism, Shamanism, Fetichism, &c. but no Judaism!

2. The few examples you give of affinities with the Hebrew language, belong only to the Floridan and Ca-rib languages. I could show you ten times as many in the Aruac, Guarani, &c. but what is that, compared with the 100,000 affinities with the primitive languages.

3. All the civilized American had a priesthood or priestly caste, and so had the Hindus, Egyptians, Persians, Celts, Ethiopians. were they all Jews?

4. Tribes are found among all the ancient nations, Arabs, Berbers, Celts, Negroes, &c. who are not Jews. The most civilized nations had castes instead of tribes in America as well as Egypt and India: the Mexicans, Mayans, Muhizcas, Peruvians, &c. had no tribes. The animals badges of tribes are found among Negroes and Tartars as well as our Indians.

5. Arks of covenant and cities of refuge are not peculiar to the Jews; many Asiatic nations had them, also the Egyptians, and nine-tenths of our American tribes have none at all, or have only holy bags, something like Talismans or Fetishes.

6. The religious cry of *Aleluyah* is not Jewish, but primitive, and found among the Hindus, Arabs, Greeks, Saxons, Celts, Lybians, &c. under the modification of *huliti*, *yululu*, *luluyah*, &c. other Americans called it *ululaez*, *gualulu*, *aluyuh*, &c.

7. The mentioned traditions of our Indians or rather the Algonquin stock only, point to a N. W. origine; but the Natchez, Apalachians, Tallascas, Mexicans, Mayans, Muhizcas, Haytians, &c. have traditions to have come from the East or through the Atlantic Ocean. It is important to distinguish the American nations of Eastern origine from the later invaders from Tartary: they are as

different as the Romans and Vandals.

8. All the alledged customs common to Jews and Americans, are positively of primitive origine and found also among nearly all the ancient nations of Asia, Africa, Europe and Polynesia, nay even among the wild negros to this day; are they then all Jews? The actual Puritans and Sabatarians who keep the Jewish Sabbath and bear Jewish names, would be greater Jews by far, if customs alone were to settle this question.

You will therefore perceive that this old notion of yours is totally impossible and at variance with all our knowledge of the Americans, when we study all the Nations, instead of taking as you do the Algonquin or Lenapian although a widely spread family for your rule and main example of all.

I hope you will consider again the question with impartiality, divesting it of your mystical problems, and studying the writers on South America with more care. You will find that Garcia a Spanish writer, had 200 years ago, in his origin of the Indians proved that they may have come from many ancient Nations, even before the flood, and Dr. M' Culloch of Baltimore, has proved the same thing in his researches on America.

C. S. RAFINESQUE.

Philadelphia August 1829.

5. THE CRADLE OF MANKIND OR THE IMALAYA MOUNTAINS.

The learned had long disputed on the locality and habitation of the primitive progenitors of mankind. Those who believed in a single cradle as Eden sought for it in various parts of Asia.—Others believing through pride or ignorance in many such cradles found them almost every where or in all the continents. Both were wrong; late uncontroversible discoveries and proofs have proved that the cradle of mankind was unique and in the central mountains of Asia. The best biblists as-

sent now to this evident historical fact, see Wells, Russell, &c. as well as all the philosophers who are not blinded by their systems.

Bishop Heber has said that the Imalaya mountains were the centre, the cradle, the throne, and the altar of the earth. Therefore they were the cradle of mankind, from whence the various nations have spread like divergent rays throughout the surrounding lands and islands.

The mountains and tablelands of Central Asia, deserve therefore the utmost attention from us in every point of view, either religious, or historical, or geographical. Yet we do not know them completely: the Southern slopes and sides with the centre alone have been lately explored, while the Eastern, Northern and Western sides have hardly been penetrated. However we know enough already to warrant our conclusions, and travellers are now attempting their further exploration. Those who have already visited and described these interesting mountains are chiefly Polo, Gruber, Goez, Webb, Moorcroft, Turner, Frazer, Herbert, Gerard, Jaqueminot, Buchanan, Kirkpatrick, &c.

Many names have been given to these central lofty regions of Asia, that furnish important references.

Ima-laya the actual Hindu name means Snowy or Icy mountains. The *Muz tag* of the Tartars has the same meaning; 2000 years ago the Greeks called them also *Imaus*.

This name is chiefly given to the Southern range which the Chinese also call *Sien-shan* or snow mountains. But every range and side has peculiar names. Three principal ranges appear to run from E. to W. of which the Imalaya or Southern is the longest since it is connected with the mountains of Persia and Caucasus to the West, and those of China in the East.

The others are the *Lung-shan* (Dragon Mts) or the *Tien-shan* (Celestial Mts) of the Chinese, and the Altay of the Tartars the most Nor-

thern. Each having tablelands between them.

The Central or Celestial Mts called also *Kuen-lun* in China appear to become in the West the *Belulag* or cloudy mts of Tartars, the *Pameru* or polar father of the Hindus, the *Paropamisus* of the Greeks, or *Bel-ur* lord of light.

The Altay or Alatay or Atalay spreads through Siberia and Tartary; with various names, the Chinese call it Kinshan or gold mts. The range called celestial in almost all languages is the most stupendous and interesting. It is the *Kilman* of the Tartars, *Tangra* of Thibet, *Meru* or pole of the earth of Hindus, *Muztag* of the Turks, &c.

But the collective name of these lofty regions was very anciently designated by appellations—the roots of which were **TAL**, **TOL**, **TUL**, meaning tall, high, lofty or eminent (lands, regions or mountains,) as it does yet in many languages, the English Chinese and Arabic for instance. Such were **TOLO**, **T'HALA**, **TALAH**, **TULAN**, &c. in the old Sanscrit and primitive languages of Asia. Whence came the Asiatic **ATLAS** and also the **ATLANTES** of the Greeks, who spreading thro' the world Westerly, gave these names to many other places and nations.

Some of these ancient and modern names will be mentioned as examples.

Talaha ancient name of Tulan or Turan or West Tartary by the Hindus, who dwelt there before the Turks.

Tolotes, *Scolotes*, the ancient Scythians and Turks.

Talash Kingdom conquered by Oguzkan 2850 years before C. now *Tala* in Turkestan, *Tali* the ancient kingdom of PEGU, *Talao* of Laos, *Telinga* of South India, &c.

Tola-nor and *Tola-pira* the lake and river of Tola in the country of the Kalkas. *Tollen* their capital.

Talish, name yet of East Cauca-

sus. *Athulas* since called Assyrians or Asuras.

Baran-tola is Central Tola, name of Thibet, this last name comes from *Theba* refuge, or *Tib* a peak. *Patala* was the capital of it, and *Tolo*, *Tulon*, *Tuling*, &c. cities in it. *Rutala* is the thibet or heaven of the Cingalese.

Tulan is a province of Gurwhal and *Tul* of Bukharia.

Thala or *Tawala*, *Dwala*, is the highest southern peak of Imalya.

Matala or *Mantulahy* or *Mansarovar* is the sacred lake of Thibet.

The 7 earthly worlds, or continents of the Hindus are often called *Tolo* or *Tala* with various appellations, whence *Tholos* and *Thule* of the Greeks, and *Tellus* of the Latins.

Out of Asia these names abound also, since the *Talas* or Atlantes occupied or conquered Europe and Africa, nay, went to America in very early times. The Hindus say that *Atalas* king of *Tulya* conquered Africa. The Greeks mention many kings or a dynasty of *Atlas* or *Telemon* in Africa and elsewhere.

The Atlantes are also called *Titans*, *Uranians*, *Ammonians*, *Thracians*, *Scythians*, &c. by the ancient Greeks and poets. See Diodorus and Bryant.

In Greece they became *Atalantes*, *Talautians* of Epirus, *Atetolians* of Western Greece, *Thalacas* or *Thracians* of the East.

They gave name to Italy, *Atala* meaning *land eminent*, or *Vetutia* from the capital of the *Hetulias* since called *Hetrurians*, *Etruscans*, *Toscans* and *Rasens*; and their capital *Vetula* and *Vetulonia*. *Atelum* was the capital of the *Oscans*. The *Tuli*, *Rutuli*, *Cutuli*, *Antuli*, *Latinis*, &c. were also tribes of Old Italians, perhaps come from the *Cuntalas* an old nation of West Imalya or the *Vetus* a nation of Demons there.

In Spain they became the *Bas-tulas*, (*Low-talas*,) *Talasen* or Sons of *Talas*, mixing as in Italy with

the Oscans or Baskans or Eskaras, since Cantabrians.

In Europe a multitude of cities, rivers and districts bear their names from Toledo in Spain to Tula in Russia.

Northern Africa is filled with their remembrance and posterity. The Western mts called *Atlas* by the Greeks, were formerly called *Adatla* or first highland, now *Adla* and *Tedula*. *Hanteta* (whence *Anteus*) *Adala*, *Altara*, *Atys*, &c. were parts of it. *Tedula* are yet the mts of Algiers. Ptolemy calls the central mts of Africa *Thalas*, and the Eastern are *Tagla*. Those of Fezzan are the *Gantela*.

Besides the true *Atlantes* of Africa which were said to have come from the Caucasus, we find there the *Autololes*, *Thalas*, *Tuladas*, or *Dardas*, (now *Torvdos*,) *Getulians*, *Teladusi*, &c. all tribes of *Atlantes*; besides the *Atavarantes*, called also *Hamantes* and *Garamantes*. Many cities bear their names, one of the oldest is *Talata* in the *Messalata* hills of *Lybia* near *Tripoli* where is a huge mound or altar 340 feet high now *Zetiten*.

These African and Spanish *Atlantes* gave their name to the Atlantic Ocean and to the great *Atlantis* or *America*! called in the Hindu books *Atala* or *Tala-tolo* the fourth world where dwelt giants or powerful men.

America is also filled with their names and deeds from Mexico and Carolina to Peru. The *Tol-tecas* people of *Tol*, and *Aztlan*, *Otolum* near *Palenque*, many towns of *Tula* and *Tolu*. The *Talas* of *Michuacan*, the *Matalans*, *Italans*, *Tulukis*, &c. of *North America*, &c.

Thus all the Western Nations trace their cradle to the East and Central Asia: while the Chinese trace it there also, as well as the Hindus of the South and the Tartars of the North.

Besides these traditional proofs, two others concur to prove this fact.

1. The height of these mountains.

2. The origine of nearly all the domestic animals and cultivated plants and fruits being traced there, where they are found wild to this day, and hardly any where else.

The *Imalaya* mts as far as known are the highest on earth, although the *Andes* of *America* reach very near to the same height; but these are volcanic, thus unfit for a very early life population & civilization: while the *Imalaya* are primitive and fruitful. The highest mts must of course have been the first to appear above the waters of the ocean; they were not then covered with eternal snow as now, being low above the waves. Their table lands are the loftiest and largest on earth; thus likely to be the first habitation of men and animals.

The African *Atlas* has been deemed by Jackson in 1820 to be higher than *Imalaya*, because it is seen 245 miles off, in latitude 32, which he estimates to indicate a height of 29610 feet; and the Mountains of *Elala* in *Suz* lat. 30 seen at 240 miles to be 28980 feet above the sea. But other travellers lessen one half or one third this huge height, stating it to be from 14500 to 18000 feet: we have however no correct mensuration of it, and it may probably be found nearer than supposed to the *Imalaya* height. Like the *Andes* of *South America*; *Chimborazo* 21425 feet high was thought their highest peak, but lately *Sorata* has been found to be 25250.

Although the different travellers who have measured the peaks of *Imalaya* differ somewhat, yet they all agree within a trifle, and in stating that the valleys, plains and table lands between them support vegetation and cultivation at a higher level than any other country.

Dhawala or *Tawala* (*Hoary*) is said to be the highest properly measured, it is in lat. 19. *Webb* found it 27550 feet, while others reduce it to less than 27000. But *Chumelari* has been estimated at 30,000 feet. While the *Celestial Mountains* and *Muz-*

tag are believed to exceed 32000 feet, although they have not yet been reached nor measured. But they are seen at the distance of nearly 300 miles.

The limits of perpetual snow in lat. 32 is not at 11000 feet as systematic calculation would have it, but at 13500 feet. Frazer found vegetation as far as 13192 feet. Mosses and Lichens as far as 14700 feet. Against all rules the Northern side or slope of Imalaya is warmer than the Southern, owing to dryness and latent heat. Gerard and Jaqueminot found in Thibet cultivation as far as 17000 feet, and perpetual snow only at 20500 feet! Therefore the climate and soil improves inland in these lofty regions, and were still milder once when the peaks had no perpetual snow.

Thibet lies between the Imalaya and Celestial Mountains, Tartary between these and the Golden Mountains or Altay. Both are lofty plains and fable lands from 10000 to 15000 feet above the sea, fertile and populous, except in the sandy desert of Cobi.

North of Cashmir the Imalaya Mountains take the name of Vindhyan, West of the Indus they become the Hinducush meaning Dark Mountains, with peaks 20500 feet high. Three ranges of ridges form the Imalaya proper, with peaks from 21000 to 28000 feet high. The third ridge is not penetrated by the rivers, the Indus and Ganges penetrate the two others.

The Geology of these Mountains is very interesting. As you ascend them four ranges of secondary hills and mountains are found on their Southern slopes. The first from 500 to 750 feet above the plains of India is of Sandstone, clay and gravel. The second is of Claystone from 1500 to 5000 feet high. The third are mountains of Limestone 7000 feet high. And the fourth of slate 8000 feet high. See Frazer.

Beyond begin the three primitive ranges of Imalaya, which are how-

ever all stratified even to the highest peaks. The strata are commonly inclined 40 to 45 deg. but often perpendicular, and some jumbled in all kinds of direction and forms, so as to resemble marble paper! They are commonly of Quartz, (black or white) Hornstone, Granite, Gneis, and Micaslate. Gangotri is entirely granitic, Jumnotri has veins of all colors. See Frazer.

No Volcanoes are found in Imalaya, except lake and water volcanoes; Tirtaputi in Ladak is a hot spring like a volcano spouting sediments half a mile in circuit. Some burning volcanoes in the Altay have not yet been visited. No diluvium is found on the mountains and peaks of Imalaya, except in some valleys, where many eruptions and disruptions of lakes have taken place. They have fossil remains in the secondary strata; but hardly any diluvial fossils. It is therefore doubtful whether the geological floods reached that lofty land, and probably it was the THEBA of the Bible or refuge in Noah's flood.

Imalaya and its branches E. and W. are the true native country of the Wild Ox, Horse, Ass, Goat, Sheep, Hog, Dog, Cat, Camel, Hen, Duck, Pheasant, &c, and almost every other animal that has since been domesticated, except those peculiar to America: the Yak or Thibet Cow is peculiar to it, and has not yet been spread very far.

All our fruit trees, all our cereal plants, and nearly all our culinary plants are also found growing wild in those mountains. It was long a problem whence came our Wheat, Barley, Maize, Rice, &c.; but they have lately been found there by travellers. They all say that there, is found the climate with the productions of Europe. They enumerate among the wild trees and fruits, the Apples, Pears, Grapes, Plums, Peaches, Apricots, Raspberries, Strawberries, Currants, Chesnuts, Walnuts, Mulberries, Gooseberries, Almonds, Cherries, &c. &c. also,

the Roses, Oaks, Pines, Larch, Cedar, Heath, Birch, Fir, &c. While among the useful plants the following are both wild or cultivated in various parts, Wheat, Barley, Rye, Rice, Mayze, Cotton, Pease, Beans, Lentils, Millet, Gourds, Melons, Carrots, Turnips, Cabbage, Onions, Fennel, Egg plant, Madder, Clover, &c., &c.

These animals, fruits and plants, which have accompanied mankind in his migrations, afford a strong proof that man first knew them there, which was their common cradle, and where began pastoral and agricultural life.

Many other proofs could be adduced to support this truth: since civilization, religions, governments, astronomy, the arts and sciences, nay every thing valued or employed by men can be traced also by us Easterly to those mountains, or those of Iran and Turan on their West slope near Persia and Turkestan; Cashmire and Balk being there two of the earliest seats of civilization. There also points the Grecian and Hindus Mythologies, Chinese History, and every primitive tradition; nay every language of the earth can be traced to that central cradle.

C. S. RAFINESQUE.

6. OREOLOGY.

Relative Age of Mountains.

Although it is impossible in Geology to ascertain the exact age of Mountains, Strata, and Fossils, yet it is possible in many cases to detect their relative age or successive formations.

Beaumont who has lately paid peculiar attention to Mountains, thinks that he has found their relative age, and divides them into six ages or series.

1. Oldest, the undisturbed Sedimental Mountains, such as those of Saxony, Pilat and Cotedor in France, &c.

2. Second age, Mountains in parallel ridges, such as the Alleghany, Carpathian, Apennines, Pyrenees,

Ghauts of India, also the Mountains of Persia, Dalmatia, &c.

3. Third age, Circular Mountains with concentric Ridges, such as the Western Alps, Mountains of Norway, Brazil, &c.

4. Fourth age, Mountains in divergent groups, such as the Central Alps, the Balkan, Caucasus, Himalaya and Atlas of Africa, &c.

5. Fifth age, the Andes of America.

6. Sixth age, Volcanic Mountains, the newest.

This System, like so many others in Geology, is based on observations chiefly made in Europe, and the opinion that Mountains have broken the primitive concentric Strata of the earth by rising from below by crystallization or intumescence. Is it not erroneous to suppose that the primitive Himalaya and Caucasus are less ancient than the Secondary Alleghany & Apennines? they appear quite as much disposed in ridges. All Mountains except the Volcanic may be considered as huge Crystals; their distinction in four series, Sedimental, Parallel, Concentric and Divergent, appears correct; but this disposition in crystallization may have been contemporaneous, and does not afford the best clue to their relative age. Perhaps the Tabular Mountains raised on Table lands, like the Himalaya and Andes, are the oldest.

C. S. R.

8. GEOLOGICAL SURVEY OF THE ALLEGHANY MOUNTAINS OF PENNSYLVANIA, IN 1818, from West to East.

By Professor C. S. Rafinesque.

It is well known that the Alleghany Mountains run in parallel ridges from North to South, therefore in crossing them from East to West or from West to East, their structure, and the component strata of the successive ridges are easily ascertained.

I have crossed or penetrated those Mountains in 20 places from New-

York to Virginia; between 1804 and 1832; but in November 1818, returning from the Western States when vegetation was nearly gone, I attended particularly to their geology, crossing them on foot to collect specimens for my friend Z. Collins.

The result will be given in the form of a Journal, as written on the spot at the time.

11th November 1818. From Pittsburg to a tavern 24 miles E. country rolling. Sandstone perfectly flat, supporting in many places Bitumite and Slate: many Coal mines opened on the sides of the hills; some fossil remains in the strata.

12th. To Whitestone tavern 18 miles. Near Greensburg 32 miles from Pittsburg, the Sandstone strata cease to be perfectly horizontal, and begin to dip a little to the W. or rise to the E.

13th. To Laughlin 15 miles. At Youngstown 48 miles from Pittsburg, begin the Alleghany Mountains, the first range is called Chestnut Ridge, they are not high, only 500 to 600 feet. First ridge one mile broad to the Loyalhanah Valley, running through the hills. Strata of Sandstone very thick, slightly dipping W. Huge cubical Sandstone rocks on the sides and bottom of the valley, disrupted from the strata. Iron ores and mines in the hills. Coal in many parts, on Coalpit run, &c. Near Laughlin at the foot of the Laurel Hills, conical knobs or round hills with horizontal strata, Coal and Iron.

14th. To Quenehan Creek 10 m. The Laurel Hills are the second ridge of the Alleghany, beginning 57 miles from Pittsburg. Higher than the Chestnut Hills, about 800 to 1000 feet. Their structure is very different. They are seven miles across, forming a narrow table land on the top, which is of bluish Limestone in vertical strata! with some mixture of white Sandstone, so friable as to crumble into white sand, and some Shistose Slate in confined layers; but on each side of the hills or moun-

tains, the usual coarse Sandstone is found, which dips W. on the West side, and E. on the East side, so as to become nearly connivent on the top.

15th. To the top of Alleghany 17 miles. Passed several small hills and ridges. Rase hill is the principal, partly slaty nearly horizontal. Beginning of the Glades or Stony unwooded places.

The third ridge of the Alleghany is the main, the highest and broadest, being called the Backbone Mountain, and dividing the waters falling into the Ohio and Atlantic. It begins 74 miles from Pittsburg, Stoystown and Stony Creek are at its W. foot. It is about 2000 ft. high; 12 miles across, forming a flat table land eight miles wide here, and further north much wider, as I am told, although the maps makes it a simple ridge. The Western Slope is very much inclined, the Eastern more abrupt and higher. It is altogether of coarse Sandstone, and Grit, with strata flat on the top, but appearing to dip W. slightly on each side. Some white friable Sandstone on top, forming Sandy tracts with Pines. Coal is found in many places, chiefly on the E. Spurs.

16th. To Bedford 17 miles. In the Eastern Valley or Waters of Juniata, beginning of the Slaty Region. The Slate is Silicious, dipping W. from the Alleghany to Schellsburg, E. of it becoming flat and covering the Sandstone. Coal is found in some parts of the Juniata Valley and near Yellow Creek.

Between Schellsburg and Bedford the hills are very interesting. Tull hill is composed of vertical Slate strata, running either from E. to W. or from N. to S. Long hill and Wills Mountain run transversely or from E. to W. Bedford near the Juniata, has many important localities around. The Mammoth Swamp, where Mammoth bones were found, the Mineral Springs, much resorted, with Limestone hills near them, strata dipping S. E. with many fossils.

17th. To Licking Creek 25 miles. East of Bedford are two narrow Water Gaps in the fourth ridge of the Alleghany, called the Tortoise or Terrace Mountain, through which the Juniata has broken and flows. The first is Denning's Gap. The strata are of Sandstone, dipping S. W. with many huge Limestone boulders unrolled but carried by the Debacle. The second Gap or Turtle Gap, is of Vertical Sandstone, with Limestone resting on it, or to each side in inclined strata; while between the two gaps five miles distant, the whole is Slate or Schist, nearly vertical, and running from N. E. to S. W.

Along the Juniata and in the valley beyond, the whole country is of Sandstone beneath and Slate above it, in various directions, either dipping West, or undulating, or nearly vertical.

Next comes Sideling hill, the fifth Ridge of the Alleghany, 104 miles from Pittsburg and five miles broad. This has quite a regular convinent or undulating strata of the same, dipping W. on the West Side, and E. on the East Slope. East of Sideling hill, the strata are undulating like the small hills. On Licking Creek there are Licks like those of Kentucky, with Clay.

18th. To Chambersburg 26 miles. Before the Cove Valley, are two small ridges called Great and Little Scrub ridges, chiefly slaty and undulating. The fine Cove Valley has a limestone and alluvial bottom very fertile. East of it, 127 miles from Pittsburg is the Cove Mountain, a Southern branch of the Tuscarora Mountain, and the sixth Ridge of the Alleghany on this road. It is about 1200 feet high and five miles across by the winding road, although narrow at the top. The whole coarse Sandstone in thick strata, slightly dipping, or undulating over it.

Between the Cove Mountain and the South Mountains to the E. is the Big or Long Valley, here 23 miles wide, which extends from Virginia

to the Hudson. The West side of it is Slaty, the centre Limestone, and the East side Quartzose, where begins the Primitive Region. These three formations extend more or less through the valley, but are always parallel. Here the Schist or Slate extends nearly to Chambersburg. It is foliated, and nearly vertical, when dipping the small dip is E.

19th. To top of South Mountains 12 miles. Limestone nearly all the way in the valley, about nine miles wide. It is a blue or white Limestone chiefly, with veins of Marble, Lias and white Spar, with a great dip to E. but often nearly vertical or undulating; the outside is nodulose and smooth as if water worn. Many sinks in it as usual in Limestone Regions, some dry, some receiving streams that sink in it, some changed into large Springs. They are evidently Volcanic Springs, or the ancient craters of the limy outlets. No fossils seen in it.

At the foot of the South Mountains begins the primitive by a coarse quartzose rock, with Debris and Boulders of primitive rocks. These Mountains are here low, not above 500 feet high, but seven or eight miles broad, with rounded hills. The whole has a granitic nucleus as seen elsewhere; but here none is found in place. It is covered with a coarse Quartzose rock resembling Sandstone, and the whole track has many diluvial Debris and Boulders of Granite, Quartz, Limestone and a curious Pudding Stone, blue with white oblong spots. Iron is found in many places. Some boulders are rolled or worn, others are not. These Mountains improperly called South Mountains, are the Mattawan Mountains of the Indians, and the highest primitive ridge bordering the Atlantic primitive formations extending E. to the Schuylkill river at Philadelphia, in wide plains with low hills. The whole breadth of the Alleghanies near lat. 40, is therefore about 115 miles.

20th. To Gettysburg 12 miles.

Leaving the South Mountains, they are seen to run S. and bend to the N. W. The formation is the Flinty Shale, red or blue in strata nearly vertical, or dipping 60 to 80 deg. to W. and therefore not parallel with the Mountains. Some scattered small conical hills through the plains, of Granit or Gneiss, like the Mountains.

Here I terminate this Survey, as it will intersect at Gettysburg with the survey made this year from S. to N. from the Potomac to the mouth of the Juniata. In going E. to the Susquehannah I noticed however the Pigeon hills, South of Oxford and York, which are of conglomerate and singular formation.

I must conclude with some general remarks.

Although only six or seven ridges are found in the Alleghany on this main road to Pittsburg in S. Pennsylvania, their number varies in other places, as many ridges are much shorter than these main ones. In a N. W. Direction from Lancaster and Harrisburg to Lake Erie, 24 ridges at least are crossed, and the Backbone is a wide table land.

All these ridges appear somewhat like as many immense elongated crystals of the Globe, if we adopt the opinion that Crystallization has formed them: or as many long currents of submarine emanations and deposits, if we adopt the eruptive theory. It is very singular that I met but few fossils on this road and exploration. This proves that they are scarce, only found in some peculiar localities and basins, not everywhere as in the Ohio region of flat strata. Perhaps these Mountains belong to the primordial order or a very ancient age, rather to the transition than the secondary.

Boulders and water worn stones are also very scarce on them, only found in some valleys, never on the slopes and tops, except in the primitive South Mountains. Extraneous stones are found there but not in the Alleghanies. Yet fragments of

rocks, cubical or angular, large and small, are not rare, being disrupted from the nearest rocks by convulsions, earthquakes, avalanches, storms and frost.

The various directions and undulations of the strata, preclude the idea of a regular and quiet intumescence. They rather appear to be the natural result of the foliated stratum of the rocky layers. Either sandy or slaty. The Sandstones have thicker layers and a disposition to cubical fractures. They are of all sorts and colors, intermingled with in small space or widely separated, from the coarsest gravel stone, even with pebbles in it to the finest quartzose granular Sandstone, the particles of which are angular and crystallized, and to the Gritstone and Free-stone nearly homogenous or with particles of Mica. In colors I found them white, grey, red, rusty, and yellow, in various hues. The same with the Slates, which however lack the white color and have instead the black. Their tendency is to thin layers and foliated fracture. They vary in hardness, some being flinty, and others softer, with more alumine.

The soil of the Alleghanies appears to partake of the stones supporting it, being formed by their decomposition, with a mixture of alluvion carried by rains. The clay and marl formations are not common nor extensive. They as well as the licks may be traced to limited formations, rather than wide diluvial agency. Iron and chert are sometimes imbedded in the Sandstone. Some valleys are very fertile having a deep alluvial soil; but the ridges are commonly barren, with denuded rocks, although wooded and the leaves of trees have added to the scanty soil.

Although in Pennsylvania the highest ridges and tops of these mountains do not exceed 2000 or 3000 feet, they become much higher in the N. and S. at their extremities to the N. E. called Catskill Mountains, and to the S. W. In North Carolina, Tennessee, &c., called

Appalachian Mountains, both reaching 4500 feet or more.

ODOCOILEUS SPELEUS.



8. *Description of some of the fossil teeth found in a Cave in Pennsylvania. By C. S. Rafinesque.*

Among several curious fossils of the cabinet of Mr. Hayden in Baltimore, some teeth found in a Cave attracted my peculiar attention. Mr. Hayden had the goodness to present them to me: he stated that they had been found in the big cave of Carlisle, in Pennsylvania, by Mr. Wardel, who had broken them from a jawbone sticking out of the lime rock, and in fact one of the teeth is united to its socket and the fragment of a jaw.

This statement induced me to visit this locality, and new cave with fossils remains, which I did last August, in hope of finding more bones or teeth in it. A wonderful description of this cave published several years ago in the port-folio, made me expect something extraordinary; but I was as usual disappointed, since all these wonderful accounts are exaggerated. I found however the cave interesting enough in other respects; it is situated in the Big Valley, between the South and North Mountains, about one mile North of Carlisle on the banks of the Conococheague Creek, at the end of the limestone region and the verge of a slaty formation, being the main outlet of a Cavernous hill, with many holes, sinks and craters of eruptive formation as in Kentucky. But the rock is a kind of blue lias or compact limestone with thick inclined strata

and no fossils in them. The cave however is incrusted with stalagmites and a limy crust of recent formation, in which the teeth must have been found partly imbedded. In my exploration of this cave I could not find any more teeth nor bones. The account in the port-folio states that bones were found at first at the bottom of the cave, which were mistaken for bones of Indians and scattered or lost: it is very probable that they were fossil diluvial bones.

I shall give hereafter a view and plan of this cave. The floor of it is not diluvial but Stalagmital and formed since the flood, but it may overlay a diluvial bottom, and it might be worthwhile to dig in it for fossils, as they have done in similar caves of Europe.

Meantime I have carefully examined and compared the teeth in my possession, and I cannot refer them to any living animal. Mr. Hayden thought they belonged to an extinct animal akin to the Hog. It may be so; but hogs have not hollow teeth. Therefore I have called them *Odocoileus* meaning *teeth well hollowed*, and I give the exact figures of them of natural size, that Oryctologists may further compare them and reduce them to their proper family: which is perhaps near to the tribe of goats or dwarfish oxen.

Odocoileus. Generic characters of the teeth. Grinders trilobate before three large ribs and two broad furrows between, middle rib or lobe longest and largest: convex and unlobed behind. Centre with a deep lunulated hollow with a Semipartition on one side.—*Remarks.* the enamel covers the whole teeth, even the hollow inside, the brim has a suture throughout evincing a tendency to a double laminar structure. The roots have no enamel, they have 2 or 3 unequal conical prongs with a visible hole at the end. Resembling by the ribs some Oxen teeth but size of a goat.

Odocoileus Speleus or cave *Odocoileus.* Specific characters.—Size of

the animal like a large goat, teeth short & thick of a white color, swelled behind. *Remarks.*—The roots are as long as the teeth, and about half inch long. Part of the jaw fulvous, smooth outside with a wide transversal depression, cellular inside cells unequal. All in fine preservation.

The geological locality of these teeth indicates that they were brought there either by the animal itself or by diluvial agency (or an early overflowing of the creek close by), but since covered and partly incrusted by the recent limy exudation or crust of the floor and sides. They are by no means coeval with the old limestone strata.

9. *Remarks on the Monthly Journal of Geology and Natural Science of G. W. Featherstonhaugh, for May 1832, (but only published in July.)*

We regret to be compelled to notice the article in that *Stereotyped Journal*, which under the garb of a Review of two of our labors, is from beginning to end a jumble of scurility and a public attempt to injure us.—This article is a disgrace to the writer, and the Journal where it is found, as we verily believe nothing half so spiteful and disgraceful was ever before Stereotyped here or any where else.

It would be beneath the dignity of Science to imitate the example thus given us. Our purpose, which is merely to defend ourselves from a wanton and unjust attack, will be fully attained by a simple exposition of facts connected with that Journal, the editor of it and his sleeping partner Dr. Harlan. The public shall easily discriminate between the plain truth, and their farrago of envy and spite.

In April 1831, Dr. Harlan, who was then my friend, and whom I esteemed as a cultivator of some branches of Zoology, introduced me to Mr. Featherstonhaugh at his own request,

while lecturing here on English Geology. I was invited to attend his lectures, but went to very few, when I found that he had nothing new to present to the public, and was a mere echo of the local English Geologists, of whom we have so many works, that lectures are useless to teach their doctrines.

Soon after, Mr. F. undertook to publish a *Journal of Geology*, and offered me through Dr. H. to become a collaborator, stating that he would give a compensation for every page written for his *Journal*: to which I assented, although afterwards he changed his mind and pretended he could not afford any pay to writers. One of the objects of this *Journal* was stated to be by Dr. H., to oppose or expose the blunders of Prof. Siliman's *Journal of Science*, and of Prof. Eaton. I could not then receive any satisfactory explanation of this hostility of Mr. F. against them, but I have since learned in the North, that it is owing to Prof. Siliman having refused to puff Mr. F. and admit into the American *Journal*, his lucubrations on English Geology, already so well known, as he had nothing to offer on American Geology. Respecting Prof. Eaton, who has long been a friend of mine, (and whom I esteem, although he belongs to the old schools), I learnt from himself that Mr. F. was his bitter Foe, ever since something had occurred at Albany to defeat his application to be employed by the State for a new Geological Survey, because Prof. Eaton had already made one.

Many of my Geological and other Essays, having been seen by Mr. F. he highly approved of them at first, particularly my *Geology of Kentucky*, with drawings, and selected them for his *Journal*. But afterwards, when he found them clashing with his own English System, he did not publish them, and I had some difficulty to get them again. Out of six Essays put in his hands he has

only published one, my Visit to Big-bone Lick.

I was often urged by Dr. Harlan, who was the agent for Mr. F. to give him my remarks and criticisms on some of Silliman's and Eaton's minerals, &c. but I delayed to do it, although I could have no partiality for the first, who has allowed Mr. Barnes to publish my Ohio Shells, over again in his pages, and otherwise neglected my labors. I was loath to become an ally in the avowed hostility against those respectable professors.

In October 1831, I published my N. G. *Trinectes*, on which nothing was said by Dr. H. till March 1832. It was in my enumeration of some objects of my cabinet, containing not less than 117 new objects in eight pages, while Mr. F. has about eight in 117 pages of his Journal. Out of these 117 only six are criticised in May 1832.

In March 1832, I published the first number of my Atlantic Journal, which I had announced in March 1831 one year previous, before I was acquainted with Mr. F. and which my disappointment in his editorial management did not induce me to relinquish. This journal was not intended to clash with his; but as Geology and Natural Science were included in my plan: it appears that this gave great offence to both editor and partner, which added to a latent jealousy or envy of my labors, induced both to break with me, and write me very unbecoming letters.

The letter of Dr. Harlan inserted in this absurd review is dated only a few days after, and evinces his hostility by two false statements 1. He pretends that I never saw the bones of the *Aulaxodon* or *Megalonyx*, till in his possession. This is not only false but preposterous, since I had them for several years under my care, while Curator of Mr. Clifford's Museum after his death, when removed to Transylvania University; but I had seen all the fossils of Clifford's Museum, since 1818. As to

labels many were erroneous, as they are yet, on the shelves of Clifford's Museum now in the Academy of Natural Sciences of Philadelphia, where some European fossils are mixed with American, to feed future geological blunders, and my beautiful N. G. *Trianisites* of 1818, is called *Tyrannites*! When Dr. H. showed me again the bones, my memory was not bent upon that subject, yet I told him that I had called them *Aulaxodon*, from the suture teeth: but not published them yet as doubtful. Thus Dr. H. has published first these fossil remains as a new *Megaonyx*, and I gave him credit for it. While he has not done the same when he published my *Necturus* under a new name, as well as other animals, which I overlooked on the score of his personal friendship. It is not true that I have abolished the G. *Megalonyx* of Jefferson, which is a different animal.

2dly. As to the fish called by me *Trinectes* in Oct. 1831, it is true that the first specimen was given me by Dr. H. who could make nothing of it, and called it a Flounder; but he gave me the specimen to describe, name, figure and keep, I had then a right to send it to Cuvier, which I did to have his opinion on the striking want of anterior fins, making it a N. G. I quoted the true discoverer M. Carr, who at my request caught another for me, which Dr. Harlan took out of my hands in the presence of Mr. Carr, when I showed him distinctly the want of apodal fins forming a distinct N. G. from *Achirus*. Three other fishes unknown, to Dr. H., were lent me to describe, but returned afterwards as requested, with the names given them. So much for Dr. H's veracity.

Concerning the double review of Mr. F. the first relates to my enumeration or rather only to the six first objects in it. I am accused of imposture, puerility and lack of Geological knowledge; but the reviewer has mistaken his own faults and deficiencies for mine!

1. My *G. Mazama* is not new, it was published in 1817, and contains all the American Deer with simple horns. Many Sp. are living in Mexico and South America. To which living Sp. my silicified horn belongs could not be ascertained, therefore I called it *protem M. Salinaria*. Living Genera when found fossilized are certainly of the last geological age. This horn was shown to Dr. H. who said I was right in Sept. 1831 and to Mr. F. who could make nothing of it! yet I am accused of publishing without showing to such learned men!

2. The *Panallodon* was based upon teeth not silicified, but similar to the freshest bones found in the earth, nay, perhaps buried by the Indians, therefore later than N. 1. This was shown to Dr. H. who could not make out the G.

3. I have substituted the name of *Taurus* (Bull) to the absurd generic name of *Bos*, (Ox) ever since 1814, (See Princ. Somiol.) as I never could believe it right to call animals by neutral names. If Mr. F. and Dr. H. think otherwise they may call themselves *Eunuchus Sapiens!* instead of *Homo Sapiens!* This tooth is twice as big as a Buffaloe's recent tooth. It was shown to Dr. H. who pronounced it new, as unknown to him.

As to the bone called *Nephrosteon*, I acknowledge that it may be the Epiphysis of a whale, as Dr. H. did tell me in 1831, after my pamphlet was published. But it is perhaps a new whale, since he could not find it in Cuvier's (ossemens fossiles). *Nephrosteon* is however a very good name, and may become specific. Let the learned Mr. F. explain how a whale came inland in Louisiana, if not before the flood, when he blundered about diluvial.

Nothing being said of the 112 other new objects of this enumeration, animals, shells, fossils, &c. of my Cabinet, probably because the reviewers could not go beyond bones: this lessens my trouble of explanations.

The purpose of my pamphlet was merely to announce some objects for sale, and orders already received from England and France have evinced that this trifle had answered its purpose of making known my Cabinet, and collections of sixteen years arduous travels.

Thus much about bones of contention! and this comes from the two individuals who have had the effrontery to describe, name, figure, and make casts of a Sandstone Concretion for a Jawbone of a Rhinoceros, and impose it on the public as a discovery! the only one the sapient Mr. F. can boast of. Some also accuse Dr. H. notwithstanding his anatomical skill to have made a N. G. Osteopera, out of a decayed beaver skull, beaten by the tides! My fossil teeth and bones are at least bona fide such and not impositions.

The second part of this strange review, is on a par with the first. It purposed to attack the first number of the Atlantic Journal, and spends its venom upon the advertisements on the cover, (which are no more a part of it, than in the Mirror of New-York). One of which has been given at length, and then stereotyped, for which we ought to be duly thankful. The public knew long ago that I was a Pulmist ever since 1827, when I began that profession with eminent success. Nay Dr. H. and Mr. F. knew it very well and never found it amiss till I published the Atlantic Journal, and my advertisements have been seen before in 50 papers. Surely I have as much right to be a Pulmist, nay perhaps the first and only one in America, as Dr. Harlan to be a Dentist!

The contents of the Atlantic Journal have not excited pity and indignation in any one except the hearts of the reviewers. They stigmatize the whole without entering into details. What credit is due to their assertions will be best conceived by stating that they dare to say, that our No. 1, contains nothing new in

Zoology, while we have in it several new varieties of Jaguars and Cougars, 15 new animals in Cuvier's letter, a new Salamander, since acknowledged as very distinct from his *S. longicauda*, by Prof. Green, &c. My new views of geology are called ignorance; but theirs is darkness compared to mine, witness the *Rhinoceroides*!

My historical and philological discoveries are called insane! Thus was Champollion insane when he restored the Egyptian Antiquities as I do the American. The Geographical Society of Paris must have been insane to reward my Memoirs on American and Asiatic Negroes. Cuvier was insane when he dared to make out a Genus out of a single bone like myself, but Mr. F. is not insane in calling a rolled stone a jaw-bone, and making a genus of it!

I well remember that when I came to America, in 1802, Linneus was here as in England, the *nec plus ultra* of Zoology and Botany, while I who already belonged to the French school founded by Jussieu, Desfontaines, Venterat, Lamark, Cuvier, Patrin, &c. and in my youthful ardor spoke of the treasures of new plants, animals and fossils which I saw, of new genera, and the natural families; I was deemed a rash youth and innovator by Barton, Muhlenberg, Mitchell, &c. I have lived to see my youthful rashness become science, and the new school adopted in England and America, after 30 or 40 years delays and struggles. I may live yet to see my mature insatiate of improving every branch of knowledge, become wisdom, in spite of the obsolete doctrines and presumptuous conceit of such reviewers as Mr. F. and Dr. H. The French Methodic Schools of Geology, Philology, &c. will soon prevail every where as they have already, in Chemistry, Zoology and Botany; when the stale doctrines of Mr. F. and other snails in science, will be forgotten or set aside, like those of the 17th century; while mine, with those

of other pioneers and precursors of Knowledge will become the leading doctrines of this age.

But I have perhaps, bestowed too many lines on such a tissue of absurdities and false statements as this shameful rhapsody contains. It will recoil upon itself, and bring discredit upon the Journal of Geology, as the Editor has shown himself neither liberal nor competent.

If Mr. F. has been successful as a lecturer, and in other things, he has failed as an editor, a man of general science, and even as a Geologist. He has disgusted many persons by his proud and overbearing sufficiency. He has been the first to assail in myself, one of the most peaceful members of society, and a devoted friend of Science and Knowledge for 50 years past, a Veteran in Science as he once called me. As he is neither a Zoologist, nor a Botanist, nor a Philologist, nor an Antiquarian, although too proud to acknowledge it, he cannot understand my labors and rails at them, like ignorant men so often do at learning, or whatever is above their comprehension.

The whole drift of his rhapsody is to injure me in the opinion of some distant readers, compel me to cry mercy as intimated, and cry in vain! But my labors are known and will be known where those of Mr. Featherstonhaugh, (or Feather—Stone as he is properly called in New England, since all his Stones and Bones are mere Feathers,) never were, never will be, nor ever can be, since he has made no discoveries! while I count mine by thousands, having been the pioneer of discoveries in many natural and historical sciences in North America and South Europe from 1798 to 1832, having travelled 20,000 miles, always collecting or drawing. My illustrations of 30 years travels, with 2000 figures will soon begin to be published, and be superior to those of my friend Audubon, in extent and variety, if not equal in beauty. I shall study and

write as long as I live, in spite of all such mean attempts against my reputation and exertions, trusting in the justice of liberal men. Such for instance, as the reviewer of Lea's shells in the same Journal of Geology, for June; whoever he is, I am thankful to him for having properly noticed my labors on some shells which Lea had neglected or named over again. The wonder is, how this learned and candid review got alongside of the other, to which it is a perfect contrast.

C. S. RAFINESQUE.

10. ON THE FALSE RHINOCEROIDES OF FEATHERSTONAUGH AND HARLAN.

To dispel errors and to evince truth is the duty of every genuine natural enquirer.

In the first No. of the Journal of Geology for July, 1831, the leading article is the description of a presumed jaw-bone, of which a new G. is made and figured, being called *Rhinoceroides Altighaniensis*. This is the only fossil described by the editor, and was not even found by him.

When this jaw-bone was exhibited to a large class, as a great geological discovery of the Lecturer, nay, the only one he could boast of; I did not venture to contradict the assertion, supported as it was by the authority of Dr. Harlan, whatever were my doubts; but I merely ventured to state that if it was a fossil cast of grit-stone, it was a great anomaly, and to insinuate that whereas there was no proof of the animal having had a nasal horn like the rhinoceros, the name intended, did not well apply, and ought to be changed into *Tropodon*, meaning teeth like a keel. This suggestion was not well received nor attended to.

In my visit to Baltimore, in June last, after Mr. F. had proved hostile to me, I ascertained, in conversation with my old friend Mr. Hayden, one of the first Dentists and Geologists of our country, that this jaw-bone had been exhibited to him, and his

opinion asked; when he candidly stated to Mr. F. that it could not be a fossil remain, because the apparent sutures were not in the proper places nor directions, and the teeth had no traces of roots nor sockets, besides other osteological reasons of less moment.

This was before his publication, and he had the benefit of this previous advice, which he neglected; choosing rather to believe Dr. Harlan, who concurred with him in opinion, to deem it a fossil, and thus make out a grand discovery. I have since heard that other Geologists in New-York, were of the same belief as Mr. Hayden, and laughed at Mr. F.'s pretended discovery, and jaw-bone of Grit.

In fact, the anomalous nature of the specimen, and its obscure geological site, ought to have corroborated this doubt. It is sufficient to refer to Mr. F.'s own description to perceive it. He says,

"The anomalous character of this fossil, made me hesitate to publish it. The mineral composition of the fragment is very anomalous. There is nothing of the nature of bone about it, except the form. The whole substance, the two teeth included, being an aggregate of small quartzose particles or Grit. It was found in a soil either alluvial or diluvial. It is of a doubtful but ancient age," &c. &c.

Thus this jaw-bone is nothing more than an adventitious fragment of Stone, with the singular peculiarity of two projections like teeth on it: which Dr. Harlan made out to be like a Rhinoceros' !

If Mr. F. had travelled in the Alleghany mts. he would have known that such singular fragments are not uncommon, and he would have picked up, many petrified hams or legs of mutton, or monkeys' heads, or snakes, &c., as well as rhinoceros' without horns!

If he had studied our mountain grits and sandstones, he could have seen that all the fossils and casts or moulds in it, are of the oldest marine

generation of Beings. Marine plants, *Fucites*, *Terebratulites*, and other shells, &c. Therefore that no bones, nor any terrestrial animal, much less quadrupeds can be found there, nor their bones decay in it, form moulds and rocky casts washed away by diluvion or alluvion!

Therefore, this *Rhinoceroides* is a non entity! a blunder in doctrine and fact, worse than the petrified rattle snake of Silliman's Journal, so much ridiculed by both the authors of this egregious geological and Oryctological error. A mere casual concretion of indurated sand, or broken rolled fragment of sandstone grit! a *lucus natura* like Mr. F.

The blunder is great, it is not surprising in Mr. F. who never yet knew our fossils; but it is shameful for Dr. Harlan, who is otherwise a clever Anatomist. It would prove that Mr. F. with all his pretensions, is only a pseudo Geologist and no Oryctologist at all. Since he has gratified Prof. Buckland and others with new casts out of his pseudo cast, and if he has succeeded to deceive them, we venture to suggest to him a manufacture of such fossil casts; we shall if he wishes, send Stone Cutters to carve them by hundreds for him in the Alleghany Mountains, and furnish him very cheap all kinds of Sandstone Bones, and Jawbones of Camels, Girafes, Whales, Lions, Mammoths, Monkeys, and even Men! with 100 Genera to grace his Journal when resumed.

Perhaps he was served in that way with the *Rhinoceroides*, & this would be charity to him: it would prove him as credulous as Dr. Mitchell, or Silliman, or Eaton, and ignorant of Oryctology; but would clear him of intentional imposition on the public, if the warnings of Mr. Hayden and others did not rather operate against him.

C. S. R.

11. Coal Mines of Nantico in the Alleghany Mountains. By Dr. Powell.

Dr. W. B. Powell, of Baltimore, who is a very intelligent Geologist, although of the Wernerian school, has furnished us some facts respecting the Coal Mines of Pennsylvania; which he deems of Chemical formation in concave basins, and by no means of Vegetable origin. As he proposes to publish in Silliman's Journal these results of his long researches, we shall merely give here one of the facts communicated by him.

At the Nantico Falls of the Susquehannah, near Wilkesbarre, Luzerne county, the following are the succession of formations, where Coal Mines are formed in a kind of concave Basin, well displayed at the falls.

First formation, thin soil, newest of course.

Second, Slate, five to eight feet thick, newest stone.

Third, Millstone Grit, ten feet in the middle, thicker on the sides of the basin.

Fourth, Second Slate ten feet in the middle, becoming gradually 100 feet on the sides.

Fifth, First Anthracite Coal, 15 feet thick.

Sixth, Third Slate, 15 feet, 30 on the sides.

Seventh, Second Anthracite Coal, seven feet thick.

Eighth, Millstone Grit, with ~~con-~~glomerate, 125 feet thick.

Ninth, Bluish Sandstone with particles of Mica in it, 100 feet thick.

Tenth, Red Sandstone, 125 feet thick in the middle, less on the sides.

Eleventh and last formation reached. White Grawacke, very thick, and forming also a basin or concave support to the whole.

This Coal Basin therefore, has been penetrated or can be traced about 450 feet in the centre, and above 600 on the sides; it affords a fine illustration of the stratifications connected with Coal in the Alleghanies; but other localities display different successions.

12. *Geology of the Feroe Islands.*

In the description of those islands by Landt, is found a complete confirmation of the Volcanic theory of Basalt, Coal and Clay! omitted of course in our common school books of Geology. They are 22 Islands large and small in lat. 61 and 62, between the Shetlands and Iceland, connecting the Geology of both. Iceland is quite Volcanic and yet active. Shetland is primitive;* but the Feroe although Volcanic are not in activity. They have no craters, no lavas, no eruptions; but only the productions of submarine ancient, extinct volcanoes, Traps, Basalts, COAL, CLAY, &c. alternating and intermixed. The stratification is very singular and often quite plain on the sides of ruptured islands, showing 20 to 30 strata of Trap, Basalt, COAL, CLAY, and a porous stone alternating! The Basalts are of all forms, perpendicular, oblique, horizontal, SPIRAL, divergent from a nucleus! &c.

The Coal strata are imbedded in these volcanic formations; the Coal mine of Suderoe is 4000 feet long, 1200 wide, and 5 thick.

Some warm springs are found there, as in all volcanic countries. All the hills and mountains are conical, but without craters as in many submarine volcanoes. The highest is Mount Skælling, 2240 feet high in Stronove, the largest island 27 miles long.

Let the systematic Geologists explain this if they can, and tell us how Coal and Clay come out of their place, between Trap and Basalt, the newest or superincumbent rocks of theirs: and in islands where no trees can grow! See the translation of Landt, published in London, in 1810.

C. S. R.

* Yet in 1768, a Submarine Eruption of a Volcano near Fetlar Island, in the Shetlands, took place and killed the fish.

13. *ARCIBITES RHOMBIFERA, a new Encrinite, from the Cabinet of Dr. Cohen, of Baltimore. By C. S. Rafinesque.*

N.G. ARCYBITES, Raf. Head globular, 4 pairs of nerves arising from the base or concave mark of the broken peduncle, forming eight dichotomous rays on the surface, soon becoming anastomosed and reticulated, with small warts: opening or mouth terminal, round, simple, not quite central.

Spec. ch. of *A. rhombifera*. Quite globular, rays unequal, reticulations unequal, rhomboidal, small warts in the rhombes, none on the nerves.

This fine fossil is 1½ inch in diameter, converted into carbonate of lime. It was found by Dr. Cohen, near Lockport in New York, at the excavations in the geodiferous limestone. The inside is solid. It was unlabelled. My name means net-like head. It is one of the Encrinite head, most like some Echinites, but the rays are not by 5 nor stellated. The small warts may resemble ambulacri; but the umbo of the peduncle is very apparent, round and concave. The Encrinites in fact only differ from the Echinites by being pedunculated.

14. *LUCILITES NIGRA, a new univalve fossil Shell, from the Alleghany Mountains of Pennsylvania. By C. S. Rafinesque.*

This pretty fossil is in the Cabinet of my friend Hayden, in Baltimore, who found a single specimen of it, on the side of a limestone cliff at Bedford Springs, in a valley of the Alleghans of S. Pennsylvania. It was taken 60 feet from the ground. It is the most shining fossil Shell which I have seen, almost as if recent, whence I have called it *Lucilites* or shining fossil. Its black color very unnatural among shells makes a fine contrast with the dull blue limestone in which it is fixed. It belongs to the family of Patellites,

and only differs from *Patella*, by being elliptical and smooth, without radiations.

G. Lucilites Raf. Simple univalve pateloid shell. Elliptical entire, outside convex smooth without radiations, inside concave smooth. No openings nor fissures.

Sp. *L. nigra*. Black shining outside, both ends equal obtuse. Length double of the breadth. Over half an inch in the specimen.

15. AMERICAN HISTORY—ANCIENT CHRONOLOGY OF THE ONGUYS OR IROQUOIS.

By David Cusick.

In the traditions of the Tuscaroras published by Cusick in 1827, few dates are found; but these few are nevertheless precious for History.

A small volume has been printed this year by the Sunday School Union on the History of the Delaware and the Iroquois Indians, in which their joint traditions are totally neglected as usual with our actual bookmakers.

Although Cusick's dates may be vague and doubtful, they deserve attention, and they shall be concisely noticed here.

Anterior to any date, the Eag- wehewe (pronounce Yaguyhohuy) meaning real people, dwelt north of the lakes, and formed only one nation. After many years a body of them settled on the river Kanawag, now the St. Lawrence, and after a long time a foreign people came by sea and settled south of the lakes.

First date. Towards 2500 winters before Columbus' discovery of America or 1008 years before our era, total overthrow of the Towancas, nation of giants come from the north by the king of the Onguys, Donhtonha, and the hero Yatatan.

2d. Three hundred winters after or 708 before our era, the northern nations form a confederacy, appoint a king, who goes to visit the great emperor of the Golden City south of the lakes; but afterwards quarrels

arise, and a war of 100 years with this empire of the south, long civil wars in the north, &c. A body of people escaped in the mountain of Oswego, &c.

3d. 1500 years before Columbus or in the year 8 of our era, Tarenyawagon the first, a legislator leads this people out of the mountains to the river Yenonatakeh now Mohawk, where 6 tribes form an alliance called the Long-house Agoneaseah. Afterwards reduced to 5, the sixth spreading W. and S. The Kautanoh since Tuscarora came from this. Some went as far as the Onauweyoka now Mississippi.

4th. In 108 the Konearawyeneh or Flying Heads invade the 5 nations.

5th. In 242, the Shakanahih or Stone Giants a branch of the Western tribe become Canibals, return and desolate the country; but they are overthrown and driven north by Tarenyawagon II.

6th. Towards 350 Tarenyawagon III. defeats other foes called Snakes.

7th. In 492, Atotarho I. king of the Onondagas quells civil wars, begins a dinasty ruling over all the 5 nations till Atotarho IX. who ruled yet in 1142. Events are since referred to their reigns.

8th. Under Atotarho II. a Tarenyawagon IV. appears to help him to destroy Oyalk-guhoer or the Big bear.

9th. Under Atotarho III. a tyrant Sohnanrowah arises on the Kaunaseh now Susquehanah R. which makes war on the Sahwanug.

10th. In 602 under Atotarho IV. the Towancas now Mississaugers cede to the Senecas the lands E. of the R. Niagara, who settle on it.

11th. Under Atotarho V. war between the Senecas and Ottawahs of Sandusky.

12th. Towards 852 under Atotarho VI. the Senecas reach the Ohio R. compel the Ottawahs to sue for peace.

13th. Atotarho VII. sent embas-

sies to the W. the Kentakeh nation dwelt S. of the Ohio, the Chippewas on the Mississippi.

14th. Towards 1042, under Atotarho VIII. war with the Towancas; and a foreign stranger visits the Tuscaroras of Neuse River, who are divided into 3 tribes and at war with the Nanticoes and Totalis.

15th. In 1142 under Atotarho IX. first civil war between the Erians of Lake Erie sprung from the Senecas and the 5 nations.

Here end these traditions.

C. S. R.

16. AMERICAN PHILOLOGY.—VOCABULARY OF THE YARURA LANGUAGE.—BY C. S. R.

The Yarura nation of the Oronoco regions, (also called Jarura, Jaros, Worrow, Guarau, &c.) is one of the darkest and ugliest in South America, some tribes of it are quite black like negroes and are called monkeys. They are widely spread from Guyana to Choco. The following 35 words of their language collected from Gili, Hervas and Vater, have enabled me to trace their origine to Africa.

¶God.	Conomeh Anderch
¶Heaven.	Andeh.
Earth.	Dabu, Dahu.
Water.	Uy, Uvi.
River.	Nicua.
¶Sun and day.	Doh.
Moon.	Goppeh.
Star.	Boeboe.
Fire.	Condeh.
Soul.	Yuaneh.
Wood.	Yuay.
Plain.	Chiri.
¶Bread.	Tarab, Tambeh.
Name.	Kuen.
Give.	Yero.
Come.	Manatedi.
Mayze.	Pueh.
¶Man.	Pumeh.
Woman.	Ibi.
Father.	Aya.
Mother.	Aini.
Head.	Pachu.
Eyes.	Yondeh.

¶Nose.	Nappeh.
Tongue.	Topeno.
Feet.	Tao.
Evil.	Chatandra.
Being.	Abechin. Conom:
Our.	Ibba.
Will.	Ea.
Power.	Beh.
1	Canameh.
2	Noeni.
¶3	Tarani.

Those marked ¶ or 7 out of 34 have some analogy with the English, equal to 19 per cent.

The language of the Gahunas, negroes of Choco and Popayan has 50 per cent analogy with the Yarura, since out of 8 words to be compared 4 are similar.

God.	Conomeh. Y.	Copamo. G.
Man.	Pumeh.	Mehora.
One.	Canameh.	Amba.
Two.	Noeni.	Numi.

While the Ashanty or Fenty, negro lang. widely spread in W. Africa has 40 per cent of affinity with the Yarura or 6 words similar in 15 comparable.

Earth.	Dabu. Y.	Dade. A.
Mother.	Aini.	Mina.
Woman.	Ibi.	Bis.
Father.	Aya.	Aga.
Eyes.	Yondeh.	Ineweh
Water.	Uy.	Uyaba.

This is the maximum in Africa. But the language of the Papuas of New Guinea in Polynesia has 50 per cent of analogy, or 6 words out of 12, which is the maximum with the Asiatic and Polynesian negroes.

Man.	Pumeh. Y.	Ameneh P.
Woman.	Mehora. G.	
Woman.	Ibi.	Bienih.
Mother.	Aini.	Nana.
Water.	Uy.	Uar.
Evil.	Chatandra.	Tarada.
One.	Canameh	Amboher.
		Amba G.

It may have happened that the Gahunas came from the Papuas through the Pacific; but the Yaruras from the Ashantis through the Atlantic: yet have been once two branches of a single black nation.

17. BOTANY—NEW AND RARE PLANTS
OF MARYLAND NEAR BALTIMORE.
BY G. S. RAFINESQUE.

Many rare or Southern plants begin to appear near Baltimore. I noticed many in 1804 and 1819. Also in my visit and herborizations this year.

Some are preserved in the herbarium collected by Mr. Elias Durand (now of Philadelphia,) presented to the Academy of Natural Sciences of Baltimore, where I saw them. Such are the.

Andromeda marginata of Duhamel.

— *Acuminata?* Duh.

— *frondosa* of Widenow.

Ascyrum pumilum.

Inula or *Diplogon argenteum.*

Chrysogonum Virginianum L. this very rare plant I found in West Virginia also.

In the Herbarium of Dr. W. Fisher of B. are some other rare plants, such as

Helonias angustifolia.

Stachys hyssopifolia.

Calamintha caroliniana.

One of both Herbs were quite new undescribed and nameless. I shall therefore name them and characterize them as follows.

Pyrola (or *Chimaphila*) *durandi* Raf. Leaves few, shortly petiolate, ovate remote serrate, acute, unspotted. Stem naked above uniflorous, flower nodding, calyx 5 toothed, obtuse.

Discovered and collected by Mr. Durand. It belongs to the S. G. *Chimaphila* very near to *P. maculata*; but differs by broader unspotted leaves and uniflorous stem. Is it a variety of it? Only 4 or 5 inches high, with only 3 leaves, calyx short with obtuse teeth, petals white obovate obtuse, stamens bifid short, stigma sessile thick depressed.

Orchis (or *Habenaria*) *Crocea* Raf. Stem angular, leaves lanceolate acuminate, spike short cylindrical, bracts lanceolate equal to flowers, spur slender equal to ovary, petals obovate acute, labellum nearly similar hardly longer, entire.

Discovered and collected by D. W. Fisher. Very different from *O. ciliaris*, flowers smaller, saffron color, not ciliated. Slender plant 15 inches high. Probably an *Habenaria*.

18. SIX NEW FIRS OF OREGON.

Lewis and Clarke discovered and noticed without names, many years ago, several fine Fir trees of the Oregon or Columbia country. These I named and characterized in 1817 in my *Florula Oregonensis*, and since sent them to Prof. Decandolle. I now give here my names and specific characters of those 6 new sp. of the Genus *Abies* of Jussien, &c.

1. *Abies tristis* R. Gigantic Fir (First Fir L. C.) bark and branches scaly, leaves densely scattered, petiolate trigone acuminate and stiff—Stated to be the largest tree of North America, some reaching 300 feet high, 200 without branches, and 42 feet around. Petiols trigone also, leaves 3-4ths of an inch long, 1-10th wide.

2. *Abies heterophylla* R. Odd leaved Fir (Second Fir L. C.) bark rimose, leaves distichal petiolate very unequal, sulcate above, glaucous beneath, cones terminal ovate minute flexible—Reaching 180 feet high and 6 feet diameter. Leaves from 1-4th to one inch long, but all 1-20th wide. Is it a variety of the Spruce Fir?

3. *Abies aromaticata* R. Aromatic Fir (Third Fir L. C.) branches bullate balsamiferous, leaves densely scattered, forming 3 rows, sessile, lanceolate obtuse, flexible, sulcate and shining above, gibbose beneath. Reaching 100 feet high, blisters on the branches filled with a fine aromatic balsam. Leaves very small 1-8th of an inch long, 1-16th wide.

4. *Abies microphylla* R. Small leaved Fir (Fourth Fir L. C.) bark rimose, branches not bullate, leaves densely scattered, forming 3 rows, sessile, sublanceolate acute—Reaching 150 feet high. Like the last, but yielding no balsam, and with

leaves still more minute, not lucid above, only 1-12th of an inch long, and 1-24th wide. Wood white and tough.

5. *Abies mucronata* R. (Fifth Fir L. C.) bark scaly, branches virgate, leaves scattered very narrow, rigid, and oblique, sulcate above, pale beneath. Cones ovate acute, scales rounded nervose mucronate—Rises 150 feet, leaves sub-balsamic, one inch long, 1-20th wide, cones very large two and a half inches long. *Var. palustris.* Grows in swamps, only 50 feet high and with spreading branches.

6. *Abies falcata* R. (Seventh Fir L. C.) bark scaly, leaves tristichal or in 3 rows, in 2 rows upright, in lower row declinate falcate, all linear lanceolate, with trigone petiols. Cones fusiform obtuse at both ends. Only on the sea shore of Oregon, rising only 35 feet, leaves 3-4th inch long, 1-5th wide.

C. S. RAFINESQUE.

19. ON 3 N. SP. OF CLINTONIA.

Of all the New Genera of Plants which I claim to have established and well named, to few am I more partial than to the beautiful G. CLINTONIA which I published in 1817 in America and in 1819 in France (50 N. G. Journal phys.) of the natural tribe of Asparagides; which I dedicated to my worthy friend Dewitt Clinton, an eminent Philosopher, Naturalist and Statesman. I proved that it differed totally from *Dracena* and *Convallaria* to which 2 Sp. had been united, by a bilobed stigma, bilocular berry and a striking habit. I enlarged besides the Genus by describing 4 sp. of it *Cl. nutans*, *Cl. odorata*, *Cl. parviflora*, *Cl. Podanisia* in Ann. Nat. 1820, and I am now going to add 3 more, making a Genus of 7 known species.

It was then with surprise and regret that I have seen another N. G. *Clintonia* lately proposed by an oversight of Lindley, erroneously copied by my friend Torrey. Ac-

cording to the practice of Decandole this G. *Clintonia* of Lindley, must be named anew, and mine prevail, as anterior by 12 years. I have called it *protem* in my notes *Bolelia* an anagram of *Lobelia* to which it is very akin; but Lindley may frame a better new name for it, if he likes, provided he adopts my Clintonia of 1817.

G. CLINTONIA Raf. 1817 non Lindley 1830.

5. *Cl. Decantha* Raf. Leaves ciliate, Scape elongate pubescent, ombel 10 flowered, pedicles erect pubescent, petals lanceolate acute, stigma bidentate—In the Alleghany mts. of Virginia and Cumberland mts. Four leaves oblong acute.

6. *Cl. Multiflora* Raf. Leaves ample ciliate, scape smooth, ombel multiflora fastigiate, pedicles erect, bracts oblong, petals cuneate obovate acute undulate whitish—This plant I have seen in the herbarium of Dr. Torrey, sent him from England as the *Convallaria umbellulata* cultivated there, and native of Canada. It is totally different from my *Cl. odorata*, and *Cl. parviflora*, all mistaken for that plant. The leaves are large, elliptical acute, scape one foot high, with 12 to 15 flowers, smaller than in the other sp. except *Cl. parviflora*; but this has unguiculate petals. In fact all the sp. of this pretty Genus are much alike in leaves and scape but chiefly differ by the flowers and petals.

In Andrew's Repository fig. 206 the original *Dracena borealis* of Aiton and Solander is figured. Which almost indicates another sp. of this Genus, somewhat different from the *Cl. nutans* and *Cl. podanisia* which have oblong berries, ciliate leaves, &c. I shall notice it *protem* as follows.

7. *Cl. borealis* or *Cl. aitonii*, R. Leaves undulated, not ciliate, scape flexuous multiflora biombellate, ombels 3-4 flowered, nodding, petals lanceolate obtuse, stigma oblique truncate dilatate emarginate, berries globular—In Canada 4 leaves.

C. S. RAFINESQUE.

20. ON 3 N. SP. OF ERIOCaulon.

1. *E. pumilum* Raf. Leaves subulate recurved pellucid acute, convex and striated outside, flat inside. Scape stiff double than leaves, spirally striated. Capitule hemispherical, scales black obovate obtuse.—Annual like all the Sp. On the Catskill or Kiskanom mts of New York, on the margin of the two lakes, only one inch high. Flowers estival, tricolor, base green, middle brown, top nearly white.

2. *E. filiformis* Raf. Leaves filiform elongate striate, scape subequal round stiff, capitule hemispherical, scales lanceolate obtuse.—In New Jersey and Virginia in swamps. Flowers estival, whitish. Scape one foot high.

3. *E. Spathaceum* Raf. Leaves subulate very short, scape round hardly striate, base spathaceous, spatha bivalve obtuse subequal membranaceous. Capitule spherical white, scales ovate oblong obtuse.—From Florida, seen in the herbarium of Mr. Halsey without a name. Scape one foot high.

C. S. RAFINESQUE.

21. ERPETOLOGY.—ON 3 NEW WATER SALAMANDERS OF KENTUCKY.

The Salamanders are very numerous in North America, and although we know now about 40 sp. of them, as many more remain undescribed. Prof. Green has found some new ones this year in West Pennsylvania, among which, is a remarkable new Genus with a tubular tongue and callose toes, which he will describe by the name of *GLOSSIPHUS*. I have described already 2 land Salamanders, in N 1 and 2: I will now add a N. G. and 2 N. Sp. of water Salamanders, making 5 from Kentucky. I propose to give hereafter good figures and ample description of them.

N. G. *EURYCEA* Raf. Mouth very large with many rows of small teeth Opercules a round hole on each side of the neck. Feet with 4 and 5 toes Tail conical carinate above—*Sp. E. mucronata* R. Upper jaw longer

nucronate, eyes very small round, body marbled of two shades of brown tail one third of total length.—In the river Kentucky. Whole length 21 inches.

The 2 N. Sp. belong to the G. or S. G. *Triturus* (*Triton* of some but not Lin.) or Salamanders with compressed tails.

1. *S.* or *Tr. lutescens* R. Entirely of a dirty pale yellow, without spots, tail equal to the body.—In West Kentucky in rocky limestone springs in the barrens or glades, 5 to 6 inches long.

2. *S.* or *Tr. nebulosus* R. Blackish with pale or brown clouded spots on the back, tail nearly conical short one third of total length.—In small streams and fissures of rocks in the knobs of West Kentucky, length 3 to 4 inches. C. S. RAFINESQUE.

PSEPHIDES PARADOXA.



22. CONCHOLOGY.—A New Tubular fresh water shell of the Alleghany mts.

I was much gratified to find this year a new fluviatile shell of the simple tubular form; but the animal was not within. It was found in Sherman creek, a mountain stream of Perry County, Pennsylvania, among the Alleghanies.

This strange shell has something mysterious in it. It appears a mass of gravel; strongly cemented, even holding sometimes minute fossil terebratulites and other fossils. It is not therefore the tube of a *Phryganæa*. Since they are all brittle, arenaceous or membranaceous. Yet the worm that forms it and dwells in it, (as no molusca form tubular shells) is unknown, and I was told none has ever been seen in it. A singular idea was suggested to me by Prof. Green that it might be a fossil shell! Since it is found in a rich fossil region; and

has a stony appearance; but being found free, in the water or on the banks of the stream, and never imbedded in stones it can hardly be so. The subject must remain doubtful, until other consimilars Genera are found. Meantime I give a figure of it, and its description; whereby it appears to approximate to the Sabelites and other tubular annelides, perhaps also to my *G. Potamiphus* of the R. Ohio, published in 1819, whose worm I detected; but its shell is arenaceous open at both ends and operculate before. My name of *Psephides* means gravelly tube.

Psephides. Cylindrical tubular shell, open before, closed behind, opening round entire, inside smooth hard stony, outside entirely formed by cemented gravel and little shells.

Psephides paradoxus Raf. Uncial, diameter equal throughout, about one sixth of length and obtuse, inside brown, outside versicolor.—Length less than one inch. The gravel of the outside is of all colors, formed by small angular fragments of shale, slate, chlorite, quartz and other stones seldom found in Sherman Creek! and even entire fossil shells or fragments of fossils.

C. S. RAFINESQUE.

23. FOSSILS OF SHERMAN CREEK.

I have discovered this year, this new locality for fossil remains, and collected about 50 sp. in a tract of 5 miles near the Kennedy Springs, in the Quaker hills and Mt. Pisgah forming a geological basin of red, yellow, brown and white sandstone, gravel or pebble stone and conglomerate, holding chert of all colors. The fossils are found in all, and even the chert or Petrosilex. They are of the oldest formation.

I mean to give hereafter a full account of this fine oryctological region and all the fossils collected in it. I shall here merely indicate them. Most of them are new.

Vegetable fossils Fucites 2 Sp.

Animal fossils. Porostomites 2 Sp. Encrinites 2 Sp. Turbinolite 1 Sp.

Fossil shells. Orthoceratite 1 Sp. Gryphites 3 sp. Diclima 3 sp. Productus 6 sp. Terebratulite 8 sp. Eurytes 3 sp. Gonotrema 2 sp. Diclipaites 4 sp. Trunculites 3 sp. Pleureterites 10 sp. &c.

This last is a fine N. G. quite prolific in sp. it differs from Productus by being inequilateral. Nay it may be the type of a new tribe, since one sp. which I have called *PL. stellata* having a bilobed hinge and a quadridid shell might also form a peculiar *G. Hemisterias quadrifida*. C. S. R.

24. ATLANTIC REVIEW.

42. *Sylva Americana* by D. T. Browne, Boston, 1832. 1 vol. 12mo. with many wood figures. A useful compilation or rather abridgement of Michaux's trees of North America. The trees omitted by him are also omitted there. No claim to originality—yet extolled in the North American Review!

43. *Indian Biography of 200 Indian chiefs, &c. of North America*, by Samuel Drake. Boston 1832. A vol. 12mo. 2 fig. A very clever little book or lexicon, partly original, useful for historical reference, and very entertaining withal.

44. *Annals of Tryon County in New York*, by William Campbell, New York 1831. A vol. 8vo. maps. Containing an interesting account of the settlement of that part of New York, and the Indian wars of the revolution there.

45. *Adventures and residence on the Columbia river, from 1812 to 1818*, by Ross Cox, New York 1832. A vol. 8vo. Amusing narrative, with some information on the country, fur trade and Indians of Oregon; but little addition to geography and science.

46. *Monograph of the Trilobites of North America*, by Prof. Green, with casts of all the sp. Philadelphia 1832. A vol. 12mo. Important and original work on these singular fossils, with some N. G. and many N. Sp. but by no means all. We shall notice again this labor if we can.

C. S. R.